

IDEA-1921-64
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20 April 1964

MEMORANDUM FOR THE RECORD

SUBJECT : 112B Camera (Delta II)

1. As a result of successful flight tests of the 112A (Delta I) camera in September 1963 and subsequent operational use, procurement was initiated for a quantity of four Delta II cameras in November 1963. The Delta I camera was assembled primarily to explore the usability of this type instrument in an airborne environment. Considerations that did not contribute directly to the primary purpose were omitted in the interest of early delivery. Among these were stereo coverage, full 70° lateral coverage, window restriction, data block, and frame counter.

2. The Delta II camera in essence consists of two Delta I cameras attached together at a fixed angular relationship of 26° to provide convergent stereo capability. Each camera carries 7800 feet of 70 mm film providing 2634 nautical miles of coverage 17 miles wide at 70,000' altitude. The lenses of the two cameras scan across the line of flight, one rotating clockwise and the other counter clockwise, putting the ground image on the film during one segment of the 360° lens rotation. During the balance of the rotation, the exposed film is moved on to the take up spool while the scan arm moves back into position for the next exposure.

3. Since the ground speed and altitude are variables affecting rate of image motion, three modes or cycle rates have been provided to allow the pilot to select the correct rate. Exposure or effective shutter speed is preset on the ground by selection of the appropriate slit width for the expected sun angle and ground reflectance.

4. The first Delta II camera was delivered on 20 March 1964, the second will be delivered on 20 April, the remaining two at three week intervals thereafter.

25 YEAR RE-REVIEW

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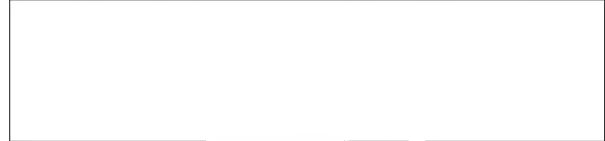
5. A series of four flight tests conducted during the last week of March demonstrated a capability for resolving one foot on the ground from 70,000'; that is, 50% of the photography measured on resolution targets was better than one foot on the ground and 50% was greater than one foot. The best resolution measured on the 112 targets located was 144 lines/mm, the poorest was 36 lines/mm. Most targets were more than 15° off axis and included high, medium and low contrast. Atmospheric conditions were good but light turbulence was encountered as well as high roll and pitch rates that would tend to degrade the imagery.

6. Photography of urban areas permitted location of people on golf courses, playgrounds and streets, as well as power transmission lines, telephone poles, etc.

7. A prestrike refueling was simulated, in which photography before and after disclosed condensation on the windows; however, it dissipated within 15 minutes which appeared to be a satisfactory margin. The test series also disclosed a need for additional clearance between the hatch and the camera to avoid accidental damage to the instrument. A hatch modification is underway and scheduled for completion 27 April. System VI provisions will also be included.

8. It is anticipated that the first Delta II will be operationally ready on 1 May 1964 with the balance at three week intervals thereafter.

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2 - AD/OSA
3 - D/TECH/OSA
4 - D/FA/OSA
5 - MD/OSA
6 - IDEA/OSA
7 - PS/OSA
8 - chrono
9 - RB/OSA

